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NEWS 13 Nov 30 Files VETU and VETB to have open access  
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NEWS 15 Dec 10 DGENE BLAST Homology Search  
NEWS 16 Dec 17 WELDASEARCH now available on STN  
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NEWS 18 Dec 17 New fields for DPCI  
NEWS 19 Dec 19 CAS Roles modified  
NEWS 20 Dec 19 1907-1946 data and page images added to CA and Cplus  
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NEWS 22 Jan 25 Searching with the P indicator for Preparations  
NEWS 23 Jan 29 FSTA has been reloaded and moves to weekly updates  
NEWS 24 Feb 01 DKILIT now produced by FIZ Karlsruhe and has a new update  
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AND CURRENT DISCOVER FILE IS DATED 05 FEBRUARY 2002  
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=> " NK cell activation inducing factor"

L1 0 " NK CELL ACTIVATION INDUCING FACTOR"

=> " NK cell activation inducing ligand" or NAIL

L2 10695 " NK CELL ACTIVATION INDUCING LIGAND" OR NAIL

=> " NK cell activation inducing ligand"

L3 3 " NK CELL ACTIVATION INDUCING LIGAND"

=> " Human 2B4"

L4 21 " HUMAN 2B4"

=> D L3 IBIB TI SO AU ABS 1-3

L3 ANSWER 1 OF 3 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 2000:28244 BIOSIS

DOCUMENT NUMBER: PREV200000028244

TITLE: Molecular cloning and biological characterization of  
**NK cell activation-  
inducing ligand**, a counterstructure for  
CD48.

AUTHOR(S): Kubin, Marek Z. (1); Parshley, Dorothy L.; Din, Wenie;  
Waugh, Jennifer Y.; Davis-Smith, Terri; Smith, Craig A.;  
Macduff, Brian M.; Armitage, Richard J.; Chin, Wilson;  
Cassiano, Linda; Borges, Luis; Petersen, Melissa;  
Trinchieri, Giorgio; Goodwin, Raymond G.

CORPORATE SOURCE: (1) Immunex Corporation, 51 University Street, Seattle,  
WA,

98101-2936 USA

SOURCE: European Journal of Immunology, (Nov., 1999) Vol. 29, No.  
11, pp. 3466-3477.

ISSN: 0014-2980.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

TI Molecular cloning and biological characterization of **NK  
cell activation-inducing ligand**, a  
counterstructure for CD48.

SO European Journal of Immunology, (Nov., 1999) Vol. 29, No. 11, pp.  
3466-3477.

ISSN: 0014-2980.

AU Kubin, Marek Z. (1); Parshley, Dorothy L.; Din, Wenie; Waugh, Jennifer Y.;

Davis-Smith, Terri; Smith, Craig A.; Macduff, Brian M.; Armitage, Richard J.; Chin, Wilson; Cassiano, Linda; Borges, Luis; Petersen, Melissa; Trinchieri, Giorgio; Goodwin, Raymond G.

AB Using the monoclonal antibody C1.7, which recognizes a signaling, membrane-bound molecule on human NK and a proportion of CD8+ T cells, we cloned a novel molecule we refer to as **NK cell activation-inducing ligand (NAIL)**. It is a 365-amino acid protein that belongs to the immunoglobulin-like superfamily

with closest homology to murine 2B4, and human CD84 and CD48. Using a soluble NAIL-Fc fusion protein, we determined the counterstructure for NAIL, CD48, which it binds with high affinity. Stimulation of human B cells with recombinant NAIL in the presence of a suboptimal concentration of human CD40 ligand or IL-4 resulted in increased proliferation. Treatment of human dendritic cells with soluble NAIL-leucine zipper protein resulted in an increased release of IL-12 and TNF-alpha. Using recombinant CD48 protein, we demonstrated the ability of this molecule to increase NK cell cytotoxicity and induce IFN-gamma production. We also showed that 2B4 binds to mouse CD48, suggesting that interaction of these receptors may play a similar role in both species. Taken together these results indicate that the NAIL-CD48 interaction may be an important mechanism regulating a variety of immune responses.

L3 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:727355 CAPLUS

DOCUMENT NUMBER: 132:75118

TITLE: Molecular cloning and biological characterization of **NK cell activation-inducing ligand**, a counterstructure for CD48

AUTHOR(S): Kubin, Marek Z.; Parshley, Dorothy L.; Din, Wenie; Waugh, Jennifer Y.; Davis-Smith, Terri; Smith, Craig A.; Macduff, Brian M.; Armitage, Richard J.; Chin, Wilson; Cassiano, Linda; Borges, Luis; Petersen, Melissa; Trinchieri, Giorgio; Goodwin, Raymond G.

CORPORATE SOURCE: Dep. Immunobiology, Immunex Corporation, Seattle, WA, 98101, USA

SOURCE: Eur. J. Immunol. (1999), 29(11), 3466-3477

CODEN: EJIMAF; ISSN: 0014-2980

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

TI Molecular cloning and biological characterization of **NK cell activation-inducing ligand**, a counterstructure for CD48

SO Eur. J. Immunol. (1999), 29(11), 3466-3477

CODEN: EJIMAF; ISSN: 0014-2980

AU Kubin, Marek Z.; Parshley, Dorothy L.; Din, Wenie; Waugh, Jennifer Y.; Davis-Smith, Terri; Smith, Craig A.; Macduff, Brian M.; Armitage, Richard J.; Chin, Wilson; Cassiano, Linda; Borges, Luis; Petersen, Melissa; Trinchieri, Giorgio; Goodwin, Raymond G.

AB Using the monoclonal antibody C1.7, which recognizes a signaling, membrane-bound mol. on human NK and a proportion of CD8+ T cells, the authors cloned a novel mol. the authors refer to as **NK cell activation-inducing ligand (NAIL)**. It is a 365-amino acid protein that belongs to the Ig-like superfamily with closest homol. to murine 2B4, and human CD84 and CD48. Using a sol. NAIL-Fc fusion protein, the authors detd. the

counterstructure for NAIL, CD48, which it binds with high affinity. Stimulation of human B cells with recombinant NAIL in the presence of a suboptimal concn. of human CD40 ligand or IL-4 resulted in increased proliferation. Treatment of human dendritic cells with sol. NAIL-Leu zipper protein resulted in an increased release of IL-12 and TNF-.alpha.. Using recombinant CD48 protein, the authors demonstrated the ability of this mol. to increase NK cell cytotoxicity and induce IFN-.gamma. prodn. The authors also showed that 2B4 binds to mouse CD48, suggesting that interaction of these receptors may play a similar role in both species. These results indicate that the NAIL-CD48 interaction may be an important mechanism regulating a variety of immune responses.

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS

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FORMAT

L3 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:640883 CAPLUS

DOCUMENT NUMBER: 131:285388

TITLE: **NK cell activation inducing ligand**

INVENTOR(S): Kubin, Marek Z.; Goodwin, Raymond G.

PATENT ASSIGNEE(S): Immunex Corp., USA

SOURCE: PCT Int. Appl., 113 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9950297	A1	19991007	WO 1999-US6215	19990323
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
AU 9931970	A1	19991018	AU 1999-31970	19990323
EP 1064307	A1	20010103	EP 1999-914030	19990323
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI			

PRIORITY APPLN. INFO.:  
 US 1998-79845 P 19980327  
 US 1998-96750 P 19980817  
 WO 1999-US6215 W 19990323

TI **NK cell activation inducing ligand**

SO PCT Int. Appl., 113 pp.

CODEN: PIXXD2

IN Kubin, Marek Z.; Goodwin, Raymond G.

AB The authors disclose the cloning and characterization of **NK cell activation inducing ligand**

(NAIL) for a human cDNA expression library. Transcripts for NAIL polypeptide were found in various tissues; the highest expression occurred

in spleen and peripheral blood lymphocytes. In addn., NAIL was

demonstrated to be a functional ligand for the CD48 counter-receptor.  
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS  
FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

=> D L4 IBIB TI SO AU ABS 1-21

L4 ANSWER 1 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 2001:278723 BIOSIS  
DOCUMENT NUMBER: PREV200100278723  
TITLE: Molecular cloning, expression and characterization of the  
rat NK cell receptor 2B4.  
AUTHOR(S): Kumaresan, Pappanaicken R. (1); Stepp, Susan E.; Chuang,  
Samuel S. (1); Boles, Kent S. (1); Medina, Miguel A. (1);  
Lai, Wayne C.; Ryan, James C.; Bennett, Michael; Kumar,  
Vinay; Mathew, Porunelloor A. (1)  
CORPORATE SOURCE: (1) University of North Texas Health Science Center at  
Fort  
Worth, Fort Worth, TX, 76107 USA  
SOURCE: FASEB Journal, (March 7, 2001) Vol. 15, No. 4, pp. A701.  
print.  
Meeting Info.: Annual Meeting of the Federation of  
American  
Societies for Experimental Biology on Experimental Biology  
2001 Orlando, Florida, USA March 31-April 04, 2001  
ISSN: 0892-6638.  
DOCUMENT TYPE: Conference  
LANGUAGE: English  
SUMMARY LANGUAGE: English  
TI Molecular cloning, expression and characterization of the rat NK cell  
receptor 2B4.  
SO FASEB Journal, (March 7, 2001) Vol. 15, No. 4, pp. A701. print.  
Meeting Info.: Annual Meeting of the Federation of American Societies for  
Experimental Biology on Experimental Biology 2001 Orlando, Florida, USA  
March 31-April 04, 2001  
ISSN: 0892-6638.  
AU Kumaresan, Pappanaicken R. (1); Stepp, Susan E.; Chuang, Samuel S. (1);  
Boles, Kent S. (1); Medina, Miguel A. (1); Lai, Wayne C.; Ryan, James C.;  
Bennett, Michael; Kumar, Vinay; Mathew, Porunelloor A. (1)  
AB 2B4 (CD244) is a cell surface glycoprotein of the immunoglobulin  
lymphocytes  
engagement  
function. It is the high affinity ligand for CD48. In NK cells,  
of 2B4 with a specific monoclonal antibody or with CD48 can trigger  
cell-mediated cytotoxicity, IFN-gamma secretion, phosphoinositol turnover  
and NK cell invasiveness. Recent reports suggest that defective 2B4  
signaling and NK cell function may contribute to the disease pathogenesis  
in X-linked lymphoproliferative syndrome. Here we describe the molecular  
characterization of the rat 2B4 gene. The cDNA encodes a protein of 395  
amino acid residues that contain two Ig domains in the extracellular  
region and three unique tyrosine motifs (TxYxxV/I/A) in the cytoplasmic  
region. The predicted protein has 81 % and 68 % aa similarity with mouse  
2B4 and human 2B4 respectively. Additionally, it has  
94 % and 89 % similarity at the protein level with the recently reported  
rat 2B4 related genes, r2B4R-tm and r2B4R-se respectively. Northern blot  
analysis indicated the presence of multiple transcripts in rat LAK cells  
and RNK-16 cells. Immunoprecipitation and deglycosylation studies showed  
that rat 2B4 is glycosylated to similar extent as that of mouse and

**human 2B4.**

L4 ANSWER 2 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 2001:266902 BIOSIS  
DOCUMENT NUMBER: PREV200100266902  
TITLE: Transcriptional regulation of the **human 2B4** (CD244) gene in natural killer cells: Prominent role for activator protein-1.  
AUTHOR(S): Chuang, Samuel S. (1); Pham, Hoang-Tuan (1); Kumaresan, Pappanaickan R. (1); Mathew, Porunelloor A. (1)  
CORPORATE SOURCE: (1) University of North Texas Health Science Center, 3500 Camp Bowie Blvd, Fort Worth, TX, 76107 USA  
SOURCE: FASEB Journal, (March 7, 2001) Vol. 15, No. 4, pp. A698. print.  
Meeting Info.: Annual Meeting of the Federation of American Societies for Experimental Biology on Experimental Biology 2001 Orlando, Florida, USA March 31-April 04, 2001  
ISSN: 0892-6638.  
DOCUMENT TYPE: Conference  
LANGUAGE: English  
SUMMARY LANGUAGE: English  
TI Transcriptional regulation of the **human 2B4** (CD244) gene in natural killer cells: Prominent role for activator protein-1.  
SO FASEB Journal, (March 7, 2001) Vol. 15, No. 4, pp. A698. print.  
Meeting Info.: Annual Meeting of the Federation of American Societies for Experimental Biology on Experimental Biology 2001 Orlando, Florida, USA March 31-April 04, 2001  
ISSN: 0892-6638.  
AU Chuang, Samuel S. (1); Pham, Hoang-Tuan (1); Kumaresan, Pappanaickan R. (1); Mathew, Porunelloor A. (1)  
AB 2B4 (CD244) is a cell-surface glycoprotein member of the CD2 subfamily identified by its ability to regulate natural killer and T lymphocyte functions. Ligation of 2B4 with specific mAb or its high affinity ligand, CD48 on NK cells increases cytolytic functions, IFNgamma release, MMP production and invasiveness. The cytoplasmic domain of 2B4 associates with src homology 2 domain-containing protein (SH2D1A) or signaling lymphocyte activation molecule (SLAM)-associated protein (SAP), whose mutation is the underlying genetic defect in the X-linked lymphoproliferative syndrome. To understand the transcription regulation of the **human 2B4** (h2B4) gene, we cloned and characterized approx. 1.2 kb of the 5' flanking sequence. Through primer extension analysis, we found that the transcription of the h2B4 gene initiates at multiple start sites. Using reporter plasmids containing nested deletion constructs of the h2B4 promoter, we have identified a functional activator protein-1 (AP-1) site that lies between (-106 to -100) through transient transfection analysis in YT cells, a human NK cell line. Electrophoretic mobility shift assays with antibodies specific for various protein factors of the AP-1 family revealed that multiple members of the Jun family are involved in the regulation of the h2B4 gene. Mutation of the AP-1 site not only abolishes protein/DNA interactions but also promoter activity. These results demonstrate a significant role for AP-1 in the transcriptional regulation of the **human 2B4** gene.

L4 ANSWER 3 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 2001:187959 BIOSIS

DOCUMENT NUMBER: PREV200100187959  
 TITLE: Molecular characterization of the rat NK cell receptor 2B4.  
 AUTHOR(S): Kumaresan, Pappanaicken R.; Stepp, Susan E.; Verrett, Pamela C.; Chuang, Samuel S.; Boles, Kent S.; Lai, Wayne C.; Ryan, James C.; Bennett, Michael; Kumar, Vinay; Mathew, Porunelloor A. (1)  
 CORPORATE SOURCE: (1) Department of Molecular Biology and Immunology, University of North Texas Health Science Center, 3500 Camp Bowie Blvd., Fort Worth, TX, 76107: pmathew@hsc.unt.edu  
 USA  
 SOURCE: Molecular Immunology, (August September, 2000) Vol. 37, No. 12-13, pp. 735-744. print.  
 ISSN: 0161-5890.  
 DOCUMENT TYPE: Article  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English  
 TI Molecular characterization of the rat NK cell receptor 2B4.  
 SO Molecular Immunology, (August September, 2000) Vol. 37, No. 12-13, pp. 735-744. print.  
 ISSN: 0161-5890.  
 AU Kumaresan, Pappanaicken R.; Stepp, Susan E.; Verrett, Pamela C.; Chuang, Samuel S.; Boles, Kent S.; Lai, Wayne C.; Ryan, James C.; Bennett, Michael; Kumar, Vinay; Mathew, Porunelloor A. (1)  
 AB 2B4 (CD244) is a cell surface glycoprotein of the immunoglobulin superfamily involved in the regulation of natural killer and T lymphocyte function. It is the high affinity counter-receptor for CD48. In mouse and human NK cells, crosslinking of 2B4 with a specific monoclonal antibody or with CD48 can trigger cell-mediated cytotoxicity, IFN-gamma secretion, phosphoinositol turnover and NK cell invasiveness. Recent reports of defective 2B4 signaling and NK cell function in X-linked lymphoproliferative syndrome suggest that this may contribute to the progression of this human disease. Here we describe the molecular characterization of the rat 2B4 gene. The cDNA encodes a protein of 395 amino acid residues that contain two Ig domains in the extracellular region and three unique tyrosine motifs (TxYxxV/I/A) in the cytoplasmic region. The predicted protein has 81 and 68% similarity with mouse 2B4 and human 2B4, respectively. Additionally, it has 94 and 89% similarity at the protein level with the recently reported rat 2B4 related genes, r2B4R-tm and r2B4R-se respectively. Northern blot analysis indicated the presence of multiple transcripts in rat LAK cells and RNK-16 cells. Immunoprecipitation and deglycosylation studies showed that rat 2B4 is glycosylated to similar extent as that of mouse and human 2B4. The cloning of r2B4 in the light of the availability of rat NK cell lines should facilitate in vitro and in vivo experiments to decipher the functional role of 2B4 in NK cell biology.

L4 ANSWER 4 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
 ACCESSION NUMBER: 2001:62083 BIOSIS  
 DOCUMENT NUMBER: PREV200100062083  
 TITLE: Analysis of the molecular mechanism involved in 2B4-mediated NK cell activation: Evidence that human 2B4 is physically and functionally

associated with the linker for activation of T cells.

AUTHOR(S): Bottino, Cristina; Augugliaro, Raffaella; Castriconi, Roberta; Nanni, Marina; Biassoni, Roberto; Moretta, Lorenzo; Moretta, Alessandro (1)

CORPORATE SOURCE: (1) Dipartimento di Medicina Sperimentale, Sezione di Istologia, Università degli Studi di Genova, Via G.B. Marsano 10, I-16132, Genova: alemoret@unige.it or bottino@ermes.cba.unige.it Italy

SOURCE: European Journal of Immunology, (December, 2000) Vol. 30, No. 12, pp. 3718-3722. print.  
ISSN: 0014-2980.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

TI Analysis of the molecular mechanism involved in 2B4-mediated NK cell activation: Evidence that **human 2B4** is physically and functionally associated with the linker for activation of T cells.

SO European Journal of Immunology, (December, 2000) Vol. 30, No. 12, pp. 3718-3722. print.  
ISSN: 0014-2980.

AU Bottino, Cristina; Augugliaro, Raffaella; Castriconi, Roberta; Nanni, Marina; Biassoni, Roberto; Moretta, Lorenzo; Moretta, Alessandro (1)

AB While 2B4 is a well-known surface receptor involved in NK cell triggering and induction of cytotoxicity against CD48-positive target cells, little is known about the downstream events which lead to NK cell activation. In this study we show that, in normal human NK cells, 2B4 constitutively associates with the linker for activation of T cells (LAT). Antibody-mediated engagement of 2B4 resulted in tyrosine phosphorylation not only of 2B4 but also of the associated LAT molecules. Moreover, tyrosine phosphorylation of LAT led to the recruitment of intracytoplasmic signaling molecules including phospholipase Cgamma and Grb2. These data support the concept that 2B4 may mediate NK cell triggering via a LAT-dependent signaling pathway.

L4 ANSWER 5 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 2000:515234 BIOSIS

DOCUMENT NUMBER: PREV200000515234

TITLE: Specificity of NK cell section antibodies using transfectants.

AUTHOR(S): Lanier, L. L. (1); Bakker, A. B. H. (1); Tangye, S. G.; Phillips, J. H.

CORPORATE SOURCE: (1) Department of Microbiology and Immunology, University of California San Francisco, San Francisco, CA USA

SOURCE: Tissue Antigens, (2000) Vol. 55, No. Supplement 1, pp. 78. print.  
Meeting Info.: 7th Workshop and Conference on Human Leucocyte Differentiation Antigens Harrogate, England, UK June 20-24, 2000  
ISSN: 0001-2815.

DOCUMENT TYPE: Conference

LANGUAGE: English

SUMMARY LANGUAGE: English

TI Specificity of NK cell section antibodies using transfectants.

SO Tissue Antigens, (2000) Vol. 55, No. Supplement 1, pp. 78. print.  
Meeting Info.: 7th Workshop and Conference on Human Leucocyte Differentiation Antigens Harrogate, England, UK June 20-24, 2000  
ISSN: 0001-2815.

AU Lanier, L. L. (1); Bakker, A. B. H. (1); Tangye, S. G.; Phillips, J. H.



L4 ANSWER 6 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 2000:430548 BIOSIS  
DOCUMENT NUMBER: PREV200000430548  
TITLE: Structure of the human natural killer cell receptor 2B4  
gene and identification of a novel alternative

transcript.

AUTHOR(S): Kumaresan, Pappanaicken R.; Mathew, Porunelloor A. (1)

CORPORATE SOURCE: (1) Department of Molecular Biology and Immunology,  
University of North Texas Health Science Center, Fort  
Worth, TX, 76107-2699 USA

SOURCE: Immunogenetics, (September, 2000) Vol. 51, No. 11, pp.  
987-992. print.

ISSN: 0093-7711.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

TI Structure of the human natural killer cell receptor 2B4 gene and  
identification of a novel alternative transcript.

SO Immunogenetics, (September, 2000) Vol. 51, No. 11, pp. 987-992. print.  
ISSN: 0093-7711.

AU Kumaresan, Pappanaicken R.; Mathew, Porunelloor A. (1)

L4 ANSWER 7 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 2000:241338 BIOSIS

DOCUMENT NUMBER: PREV200000241338

TITLE: Molecular cloning of transmembrane and soluble forms of a  
novel rat natural killer cell receptor related to 2B4.

AUTHOR(S): Kumaresan, Pappanaicken R.; Stepp, Susan E.; Bennett,  
Michael; Kumar, Vinay; Mathew, Porunelloor A. (1)

CORPORATE SOURCE: (1) Department of Molecular Biology and Immunology,  
University of North Texas Health Science Center, 3500 Camp  
Bowie Boulevard, Fort Worth, TX, 76107 USA

SOURCE: Immunogenetics, (April, 2000) Vol. 51, No. 4-5, pp.  
306-313.

ISSN: 0093-7711.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

TI Molecular cloning of transmembrane and soluble forms of a novel rat  
natural killer cell receptor related to 2B4.

SO Immunogenetics, (April, 2000) Vol. 51, No. 4-5, pp. 306-313.  
ISSN: 0093-7711.

AU Kumaresan, Pappanaicken R.; Stepp, Susan E.; Bennett, Michael; Kumar,  
Vinay; Mathew, Porunelloor A. (1)

AB Natural killer (NK)-cell recognition of target cells and cytolytic  
function are controlled by multiple receptor-ligand interactions. These  
receptors can transmit either positive or negative signals and belong to  
the lectin superfamily or immunoglobulin superfamily (IgSF). One member

of  
the IgSF, 2B4, is expressed on the surface of all mouse and human NK  
cells

and the subset of T cells that mediate NK-like killing. In both mouse and  
human, 2B4 is a transmembrane protein and is the  
counter-receptor for CD48. Northern blot analysis had indicated the  
existence of 2B4-related genes. Here we report the cloning of novel cDNAs  
(r2B4R) closely related to the rat 2B4. Unlike 2B4, rat NK cells express  
mRNA corresponding to both transmembrane (r2B4R-tm) and soluble  
(r2B4R-se)

forms of r2B4R. r2B4R-tm contains an open reading frame encoding a  
polypeptide of 311 amino acid residues. The encoded protein has

characteristics of type I transmembrane proteins with a 20-amino acid leader sequence, a 203-amino acid extracellular domain, a 23-amino acid transmembrane domain, and a 65-amino acid cytoplasmic domain. r2B4R-se encodes a protein of 205 amino acid residues without a putative transmembrane domain. Northern blot analysis and reverse transcriptase-PCR analysis revealed that both transmembrane and soluble forms of r2B4R are expressed in interleukin-2-activated NK cells.

L4 ANSWER 8 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 2000:167836 BIOSIS

DOCUMENT NUMBER: PREV200000167836

TITLE: 2B4 functions as a co-receptor in human NK cell activation.

AUTHOR(S): Sivori, Simona; Parolini, Silvia; Falco, Michela; Marcenaro, Emanuela; Biassoni, Roberto; Bottino, Cristina; Moretta, Lorenzo; Moretta, Alessandro (1)

CORPORATE SOURCE: (1) Dipartimento di Medicina Sperimentale (DI.ME.S), Sezione di Istologia, Universita degli Studi di Genova, Via

G.B. Marsano 10, I-16132, Genova Italy

SOURCE: European Journal of Immunology., (March, 2000) Vol. 30, No. 3, pp. 787-793.

ISSN: 0014-2980.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

TI 2B4 functions as a co-receptor in human NK cell activation.

SO European Journal of Immunology., (March, 2000) Vol. 30, No. 3, pp. 787-793.

ISSN: 0014-2980.

AU Sivori, Simona; Parolini, Silvia; Falco, Michela; Marcenaro, Emanuela; Biassoni, Roberto; Bottino, Cristina; Moretta, Lorenzo; Moretta, Alessandro (1)

AB Natural cytotoxicity receptors (NKp46, NKp44 and NKp30) play a predominant

role in human NK cell triggering during natural cytotoxicity.

Human 2B4 also induced NK cell activation in redirected killing assays using anti-2B4 monoclonal antibodies (mAb) and murine targets. Since this effect was confined to a fraction of NK cells, this suggested a functional heterogeneity of 2B4 molecules. Here we show that activation via 2B4 in redirected killing against murine targets is strictly dependent upon the engagement of NKp46 by murine ligand (s) on target cells. Thus, NK cell clones expressing high surface density of NKp46 (NKp46bright) were triggered by anti-2B4 mAb, whereas NKp46dull clones were not although they expressed a comparable surface density of 2B4. mAb-mediated modulation of NKp46 molecules in NKp46bright clones had no effect on the expression of 2B4 while it rendered cells unresponsive

to

anti-2B4 mAb. Finally, anti-2B4 mAb could induce NK cell triggering in NKp46dull clones provided that suboptimal doses of anti-NKp44 or anti-CD16

mAb were added to the redirected killing assay. These results indicate that differences in responses do not reflect a functional heterogeneity of

2B4 but rather depend on the co-engagement of triggering receptors.

L4 ANSWER 9 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 1999:416229 BIOSIS

DOCUMENT NUMBER: PREV199900416229  
 TITLE: Gene structure of the murine NK cell receptor 2B4:  
 Presence of two alternatively spliced isoforms with distinct cytoplasmic domains.

AUTHOR(S): Stepp, Susan E. (1); Schatzle, John D.; Bennett, Michael; Kumar, Vinay; Mathew, Porunelloor A.

CORPORATE SOURCE: (1) Department of Pathology, University of Texas Southwestern Medical Center, Dallas, TX, 75235-9072 USA

SOURCE: European Journal of Immunology, (Aug., 1999) Vol. 29, No. 8, pp. 2392-2399.  
 ISSN: 0014-2980.

DOCUMENT TYPE: Article  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English

TI Gene structure of the murine NK cell receptor 2B4: Presence of two alternatively spliced isoforms with distinct cytoplasmic domains.

SO European Journal of Immunology, (Aug., 1999) Vol. 29, No. 8, pp. 2392-2399.  
 ISSN: 0014-2980.

AU Stepp, Susan E. (1); Schatzle, John D.; Bennett, Michael; Kumar, Vinay; Mathew, Porunelloor A.

AB The NK cell receptor 2B4 is expressed on the surface of all murine NK cells and a subset of T cells. Ligation of 2B4 with monoclonal antibodies increases target cell lysis and IFN-gamma production. 2B4 is the high-affinity counter-receptor for CD48 in mice and **humans**. 2B4-L is a member of the CD2 subgroup of the immunoglobulin supergene family, which includes CD48, LFA-3, CD84, Ly9 and SLAM. Here we describe 2B4-S, a second 2B4 isoform, and the genomic structure of the

2B4 gene. 2B4-S is identical to the 5' end of 2B4-L, differing only at the 3' end, corresponding to a portion of the cytoplasmic domain and the 3' untranslated sequence. Both 2B4-L and 2B4-S are expressed on IL-2-activated NK cells. The genomic clone of 2B4 reveals that the two cDNA clones are products of alternative splicing. Since they differ only in a portion of the cytoplasmic domain, it is likely that they transduce different signals.

L4 ANSWER 10 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 1999:289519 BIOSIS

DOCUMENT NUMBER: PREV199900289519

TITLE: Activating interactions in human NK cell recognition: The role of 2B4-CD48.

AUTHOR(S): Nakajima, Hideo (1); Cella, Marina; Langen, Hanno; Friedlein, Arno; Colonna, Marco

CORPORATE SOURCE: (1) Basel Institute for Immunology, 487 Grenzacherstrasse, CH-4005, Basel Switzerland

SOURCE: European Journal of Immunology, (May, 1999) Vol. 29, No. 5, pp. 1676-1683.  
 ISSN: 0014-2980.

DOCUMENT TYPE: Article  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English

TI Activating interactions in human NK cell recognition: The role of 2B4-CD48.

SO European Journal of Immunology, (May, 1999) Vol. 29, No. 5, pp. 1676-1683.  
 ISSN: 0014-2980.

AU Nakajima, Hideo (1); Cella, Marina; Langen, Hanno; Friedlein, Arno;

Colonna, Marco

AB 2B4 is a cell surface glycoprotein of the immunoglobulin superfamily structurally related to CD2-like molecules. It was originally identified in the mouse as a receptor that mediates non-MHC-restricted cytotoxicity by NK cells and CD8+ T cells. Recently, 2B4 was shown to bind CD48 by molecular binding assays and surface plasmon resonance. Here, we have investigated the cell surface expression, biochemical characteristics and function of **human 2B4**. Our results show that 2B4 is expressed not only on NK cells and CD8+ T cells, but also on monocytes and basophils, indicating a broader role for 2B4 in leukocyte activation. In NK cells, engagement of 2B4 with a specific monoclonal antibody or with CD48 can trigger NK cell-mediated cytotoxicity. The contribution of 2B4-CD48 interaction to target cell lysis by different NK cell clones varies, probably dependent on the relative contribution of other receptor-ligand interactions. In T cells and monocytes, ligation of 2B4 does not lead to T cell or monocyte activation. Thus, it appears that the primary function of 2B4 is to modulate other receptor-ligand interactions to enhance leukocyte activation.

L4 ANSWER 11 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
 ACCESSION NUMBER: 1999:58771 BIOSIS  
 DOCUMENT NUMBER: PREV199900058771  
 TITLE: 2B4, the natural killer and T cell immunoglobulin superfamily surface protein, is a ligand for CD48.  
 AUTHOR(S): Brown, Marion H. (1); Boles, Kent; Van Der Merwe, P. Anton;  
 Kumar, Vinay; Mathew, Porunelloor A.; Barclay, A. Neil  
 CORPORATE SOURCE: (1) MRC Cell. Immunol. Unit, Sir William Dunn Sch. Pathol.,  
 South Parks Rd., Oxford OX1 3RE UK  
 SOURCE: Journal of Experimental Medicine, (Dec. 7, 1998) Vol. 188, No. 11, pp. 2083-2090.  
 ISSN: 0022-1007.  
 DOCUMENT TYPE: Article  
 LANGUAGE: English  
 TI 2B4, the natural killer and T cell immunoglobulin superfamily surface protein, is a ligand for CD48.  
 SO Journal of Experimental Medicine, (Dec. 7, 1998) Vol. 188, No. 11, pp. 2083-2090.  
 ISSN: 0022-1007.  
 AU Brown, Marion H. (1); Boles, Kent; Van Der Merwe, P. Anton; Kumar, Vinay; Mathew, Porunelloor A.; Barclay, A. Neil  
 AB 2B4 is a cell surface glycoprotein related to CD2 and implicated in the regulation of natural killer and T lymphocyte function. A recombinant protein containing the extracellular region of mouse (m)2B4 attached to avidin-coated fluorescent beads bound to rodent cells, and binding was completely blocked by CD48 monoclonal antibodies (mAbs). Using surface plasmon resonance, we showed that purified soluble mCD48 bound m2B4 with a six- to ninefold higher affinity ( $K_d \approx 16 \mu M$  at 37°C) than its other ligand, CD2. Human CD48 bound **human 2B4** with a similar affinity ( $K_d \approx 8 \mu M$ ). The finding of an additional ligand for CD48 provides an explanation for distinct functional effects observed on perturbing CD2 and CD48 with mAbs or by genetic manipulation.

L4 ANSWER 12 OF 21 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
 ACCESSION NUMBER: 1993:74751 BIOSIS  
 DOCUMENT NUMBER: PREV199395039251

TITLE: The involvement of protein kinase C in activation-induced cell death in T-cell hybridoma.  
AUTHOR(S): Jin, Lee-Way; Inaba, Kayo; Saitoh, Tsunao (1)  
CORPORATE SOURCE: (1) Dep. Neurosciences, 0624, UCSD, La Jolla, Calif. 92093-0624  
SOURCE: Cellular Immunology, (1992) Vol. 144, No. 1, pp. 217-227. ISSN: 0008-8749.

DOCUMENT TYPE: Article  
LANGUAGE: English

TI The involvement of protein kinase C in activation-induced cell death in T-cell hybridoma.

SO Cellular Immunology, (1992) Vol. 144, No. 1, pp. 217-227. ISSN: 0008-8749.

AU Jin, Lee-Way; Inaba, Kayo; Saitoh, Tsunao (1)

AB T-cell hybridoma activated by a variety of stimuli such as anti-cell surface antigen, notably CD3 and T-cell receptors, and Con A undergoes a cell lysis process called activation-induced cell death (AICD). It was found that the major protein kinase C (PKC) isoform in the 2B4.11 T-cell hybridoma, PKC(alpha), was translocated from the cytosolic to the particulate fraction when these hybridoma cells were induced to die by plastic-adsorbed anti-CD3 antibodies. Inhibitors of protein phosphorylation rescued 2B4.11 cells from AICD as determined by the analysis of cellular metabolism and the proportion of living cells. Furthermore, PKC(alpha) down-regulation by phorbol ester treatment abolished AICD, and the degree of PKC down-regulation correlated well

with the degree of AICD abolishment, suggesting that PKC activation represents an essential step in the molecular mechanisms underlying AICD in this T-cell hybridoma.

L4 ANSWER 13 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:354943 CAPLUS

DOCUMENT NUMBER: 135:121169

TITLE: A prominent role for activator protein-1 in the transcription of the **human 2B4** (CD244) gene in NK cells

AUTHOR(S): Chuang, Samuel S.; Pham, Hoang-Tuan K.; Kumaresan, Pappanaicken R.; Mathew, Porunelloor A.

CORPORATE SOURCE: Department of Molecular Biology and Immunology and Institute for Cancer Research, University of North Texas Health Science Center at Fort Worth, Fort

Worth, TX, 76107, USA

SOURCE: J. Immunol. (2001), 166(10), 6188-6195  
CODEN: JOIMA3; ISSN: 0022-1767

PUBLISHER: American Association of Immunologists

DOCUMENT TYPE: Journal

LANGUAGE: English

TI A prominent role for activator protein-1 in the transcription of the **human 2B4** (CD244) gene in NK cells

SO J. Immunol. (2001), 166(10), 6188-6195  
CODEN: JOIMA3; ISSN: 0022-1767

AU Chuang, Samuel S.; Pham, Hoang-Tuan K.; Kumaresan, Pappanaicken R.; Mathew, Porunelloor A.

AB The cell surface glycoprotein 2B4 (CD244) of the Ig superfamily is involved in the regulation of NK and T lymphocyte functions. The authors have recently identified CD48 as the high affinity counterreceptor for

2B4 in both mice and humans. The cytoplasmic domain of 2B4 assoc. with src homol. 2 domain-contg. protein or signaling lymphocyte activation

mol.-assocd. protein, whose mutation is the underlying genetic defect in the X-linked lymphoproliferative syndrome. In this study, the authors report the mol. cloning and characterization of the **human 2B4** (h2B4) promoter. Through primer extension anal., the authors found that the transcription of the h2B4 gene initiates at multiple start sites. The authors isolated h2B4 genomic clones and PCR amplified the 5' untranslated region contg. the promoter elements. The authors have identified a functional AP-1 site that lies between (-106 to -100) through transient transfection anal. in YT cells, a human NK cell line. EMSAs with Abs specific for various protein factors of the AP-1 family revealed that multiple members of the Jun family are involved in the regulation of the h2B4 gene. Mutation of the AP-1 site not only abolishes protein/DNA interactions but also promoter activity. These results demonstrate a significant role for AP-1 in the transcriptional regulation of the h2B4 gene.

REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 14 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:218839 CAPLUS

DOCUMENT NUMBER: 135:18516

TITLE: Molecular characterization of the rat NK cell receptor

AUTHOR(S): 2B4  
Kumaresan, P. R.; Stepp, S. E.; Verrett, P. C.; Chuang, S. S.; Boles, K. S.; Lai, W. C.; Ryan, J. C.; Bennett, M.; Kumar, V.; Mathew, P. A.

CORPORATE SOURCE: Department of Molecular Biology and Immunology, University of North Texas Health Science Center, Fort Worth, TX, 76107, USA

SOURCE: Mol. Immunol. (2001), Volume Date 2000, 37(12-13), 735-744

CODEN: MOIMD5; ISSN: 0161-5890

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

TI Molecular characterization of the rat NK cell receptor 2B4

SO Mol. Immunol. (2001), Volume Date 2000, 37(12-13), 735-744

CODEN: MOIMD5; ISSN: 0161-5890

AU Kumaresan, P. R.; Stepp, S. E.; Verrett, P. C.; Chuang, S. S.; Boles, K. S.; Lai, W. C.; Ryan, J. C.; Bennett, M.; Kumar, V.; Mathew, P. A.

AB 2B4 (CD244) is a cell surface glycoprotein of the Ig superfamily involved in the regulation of natural killer and T lymphocyte function. It is the high affinity counter-receptor for CD48. In mouse and human NK cells, crosslinking of 2B4 with a specific monoclonal antibody or with CD48 can trigger cell-mediated cytotoxicity, IFN- $\gamma$  secretion, phosphoinositol

turnover and NK cell invasiveness. Recent reports of defective 2B4 signaling and NK cell function in X-linked lymphoproliferative syndrome suggest that this may contribute to the progression of this human disease.

Here the authors describe the mol. characterization of the rat 2B4 gene. The cDNA encodes a protein of 395 amino acid residues that contain two Ig domains in the extracellular region and three unique tyrosine motifs (TxYxxV/I/A) in the cytoplasmic region. The predicted protein has 81 and 68% similarity with mouse 2B4 and **human 2B4**, resp. Addnl., it has 94 and 89% similarity at the protein level with the

recently reported rat 2B4 related genes, r2B4R-tm and r2B4R-se resp. Northern blot anal. indicated the presence of multiple transcripts in rat LAK cells and RNK-16 cells. Immunopptn. and deglycosylation studies showed that rat 2B4 is glycosylated to similar extent as that of mouse and

**human 2B4**. The cloning of r2B4 in the light of the availability of rat NK cell lines should facilitate in vitro and in vivo expts. to decipher the functional role of 2B4 in NK cell biol.

REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 15 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:9302 CAPLUS

DOCUMENT NUMBER: 134:177322

TITLE: Analysis of the molecular mechanism involved in 2B4-mediated NK cell activation: evidence that **human 2B4** is physically and functionally associated with the linker for

activation

of T cells

AUTHOR(S): Bottino, Cristina; Augugliaro, Raffaella; Castriconi, Roberta; Nanni, Marina; Biassoni, Roberto; Moretta, Lorenzo; Moretta, Alessandro

CORPORATE SOURCE: Istituto Nazionale per la Ricerca sul Cancro, Genoa, Italy

SOURCE: Eur. J. Immunol. (2000), 30(12), 3718-3722

CODEN: EJIMAF; ISSN: 0014-2980

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

TI Analysis of the molecular mechanism involved in 2B4-mediated NK cell activation: evidence that **human 2B4** is physically and functionally associated with the linker for activation of T cells

SO Eur. J. Immunol. (2000), 30(12), 3718-3722

CODEN: EJIMAF; ISSN: 0014-2980

AU Bottino, Cristina; Augugliaro, Raffaella; Castriconi, Roberta; Nanni, Marina; Biassoni, Roberto; Moretta, Lorenzo; Moretta, Alessandro

AB While 2B4 is a well-known surface receptor involved in NK cell triggering and induction of cytotoxicity against CD48-pos. target cells, little is known about the downstream events which lead to NK cell activation. In this study the authors show that, in normal human NK cells, 2B4 constitutively assoc. with the linker for activation of T cells (LAT). Antibody-mediated engagement of 2B4 resulted in tyrosine phosphorylation not only of 2B4 but also of the assocd. LAT mols. Moreover, tyrosine phosphorylation of LAT led to the recruitment of intracytoplasmic signaling mols. including phospholipase C.gamma. and Grb2. These data support the concept that 2B4 may mediate NK cell triggering via a LAT-dependent signaling pathway.

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 16 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:743523 CAPLUS

DOCUMENT NUMBER: 135:56706

TITLE: Structure of the human natural killer cell receptor 2B4 gene and identification of a novel alternative

transcript  
AUTHOR(S): Kumaresan, Pappanaicken R.; Mathew, Porunelloor A.  
CORPORATE SOURCE: Department of Molecular Biology and Immunology,  
University of North Texas Health Science Center, Fort  
Worth, TX, 76107-2699, USA  
SOURCE: Immunogenetics (2000), 51(11), 987-992  
CODEN: IMNGBK; ISSN: 0093-7711  
PUBLISHER: Springer-Verlag  
DOCUMENT TYPE: Journal  
LANGUAGE: English

TI Structure of the human natural killer cell receptor 2B4 gene and  
identification of a novel alternative transcript  
SO Immunogenetics (2000), 51(11), 987-992  
CODEN: IMNGBK; ISSN: 0093-7711  
AU Kumaresan, Pappanaicken R.; Mathew, Porunelloor A.  
AB The receptor 2B4 is a cell surface glycoprotein of the Ig superfamily  
expressed on all natural killer (NK) cells and the subset of T cells that  
mediate NL-like killing. An extensive search for **human**  
**2B4** isoforms is made and a new splice variant (2B4-B) reported.  
Overall the organization of 2B4 gene is similar to that of other Ig  
superfamily members.

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR  
THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE  
FORMAT

L4 ANSWER 17 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:212550 CAPLUS

DOCUMENT NUMBER: 134:110619

TITLE: Molecular cloning of transmembrane and soluble forms  
of a novel rat natural killer cell receptor related  
to

2B4  
AUTHOR(S): Kumaresan, P. R.; Stepp, S. E.; Bennett, M.; Kumar,  
V.; Mathew, P. A.  
CORPORATE SOURCE: Department of Molecular Biology and Immunology,  
University of North Texas Health Science Center, Fort  
Worth, TX, 76107, USA  
SOURCE: Immunogenetics (2000), 51(4-5), 306-313  
CODEN: IMNGBK; ISSN: 0093-7711  
PUBLISHER: Springer-Verlag  
DOCUMENT TYPE: Journal  
LANGUAGE: English

TI Molecular cloning of transmembrane and soluble forms of a novel rat  
natural killer cell receptor related to 2B4  
SO Immunogenetics (2000), 51(4-5), 306-313  
CODEN: IMNGBK; ISSN: 0093-7711  
AU Kumaresan, P. R.; Stepp, S. E.; Bennett, M.; Kumar, V.; Mathew, P. A.  
AB Natural killer (NK)-cell recognition of target cells and cytolytic  
function are controlled by multiple receptor-ligand interactions. These  
receptors can transmit either pos. or neg. signals and belong to the  
lectin superfamily or Ig superfamily (IgSF). One member of the IgSF,  
2B4,  
is expressed on the surface of all mouse and human NK cells and the  
subset  
of T cells that mediate NK-like killing. In both mouse and **human**  
, **2B4** is a transmembrane protein and is the counter-receptor for  
CD48. Northern blot anal. had indicated the existence of 2B4-related  
genes. Here we report the cloning of novel cDNAs (r2B4R) closely related  
to the rat 2B4. Unlike 2B4, rat NK cells express mRNA corresponding to



both transmembrane (r2B4R-tm) and sol. (r2B4R-se) forms of r2B4R.  
r2B4R-tm  
contains an open reading frame encoding a polypeptide of 311 amino acid  
residues. The encoded protein has characteristics of type I  
transmembrane  
proteins with a 20-amino acid leader sequence, a 203-amino acid  
extracellular domain, a 23-amino acid transmembrane domain, and a  
65-amino  
acid cytoplasmic domain. r2B4R-se encodes a protein of 205 amino acid  
residues without a putative transmembrane domain. Northern blot anal.  
and  
reverse transcriptase-PCR anal. revealed that both transmembrane and sol.  
forms of r2B4R are expressed in interleukin-2-activated NK cells.

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR  
THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE  
FORMAT

L4 ANSWER 18 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:184280 CAPLUS

DOCUMENT NUMBER: 132:333359

TITLE: 2B4 functions as a co-receptor in human NK cell  
activation

AUTHOR(S): Sivori, Simona; Parolini, Silvia; Falco, Michela;  
Marcenaro, Emanuela; Biassoni, Roberto; Bottino,  
Cristina; Moretta, Lorenzo; Moretta, Alessandro  
CORPORATE SOURCE: Dipartimento di Medicina Sperimentale, Universita  
degli Studi di Genova, Genoa, Italy

SOURCE: Eur. J. Immunol. (2000), 30(3), 787-793

CODEN: EJIMAF; ISSN: 0014-2980

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

TI 2B4 functions as a co-receptor in human NK cell activation

SO Eur. J. Immunol. (2000), 30(3), 787-793

CODEN: EJIMAF; ISSN: 0014-2980

AU Sivori, Simona; Parolini, Silvia; Falco, Michela; Marcenaro, Emanuela;  
Biassoni, Roberto; Bottino, Cristina; Moretta, Lorenzo; Moretta,  
Alessandro

AB Natural cytotoxicity receptors (NKp46, NKp44 and NKp30) play a  
predominant

role in human NK cell triggering during natural cytotoxicity.

Human 2B4 also induced NK cell activation in redirected  
killing assays using anti-2B4 monoclonal antibodies (mAb) and murine  
targets. Since this effect was confined to a fraction of NK cells, this  
suggested a functional heterogeneity of 2B4 mols. Here we show that  
activation via 2B4 in redirected killing against murine targets is  
strictly dependent upon the engagement of NKp46 by murine ligand (s) on  
target cells. Thus, NK cell clones expressing high surface d. of NKp46  
(NKp46bright) were triggered by anti-2B4 mAb, whereas NKp46dull clones  
were not although they expressed a comparable surface d. of 2B4.

MAb-mediated modulation of NKp46 mols. in NKp46bright clones had no  
effect

on the expression of 2B4 while it rendered cells unresponsive to anti-2B4  
mAb. Finally, anti-2B4 mAb could induce NK cell triggering in NKp46dull  
clones provided that suboptimal doses of anti-NKp44 or anti-CD16 mAb were  
added to the redirected killing assay. These results indicate that  
differences in responses do not reflect a functional heterogeneity of 2B4  
but rather depend on the co-engagement of triggering receptors.

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR  
THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 19 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:419162 CAPLUS

DOCUMENT NUMBER: 131:183840

TITLE: Cutting edge: **human 2B4**, an activating NK cell receptor, recruits the protein tyrosine phosphatase SHP-2 and the adaptor signaling protein SAP

AUTHOR(S): Tangye, Stuart G.; Lazetic, Sasha; Woollatt, T, Erica;

Sutherland, Grant R.; Lanier, Lewis L.; Phillips, Joseph H.

CORPORATE SOURCE: Department of Immunobiology, DNAX Research Institute of Molecular and Cellular Biology, Palo Alto, CA, USA

SOURCE: J. Immunol. (1999), 162(12), 6981-6985

CODEN: JOIMA3; ISSN: 0022-1767

PUBLISHER: American Association of Immunologists

DOCUMENT TYPE: Journal

LANGUAGE: English

TI Cutting edge: **human 2B4**, an activating NK cell receptor, recruits the protein tyrosine phosphatase SHP-2 and the adaptor signaling protein SAP

SO J. Immunol. (1999), 162(12), 6981-6985

CODEN: JOIMA3; ISSN: 0022-1767

AU Tangye, Stuart G.; Lazetic, Sasha; Woollatt, T, Erica; Sutherland, Grant R.; Lanier, Lewis L.; Phillips, Joseph H.

AB The genetic defect in X-linked lymphoproliferative syndrome (XLP) is the Src homol. 2 domain-contg. protein SAP. SAP constitutively assoc. with the cell surface mol., signaling lymphocytic activation mol. (SLAM), and competes with SH2-domain contg. protein tyrosine phosphatase-2 (SHP-2)

for recruitment to SLAM. SLAM exhibits homol. with the mouse cell surface receptor 2B4. The human homolog of 2B4 has now been identified. It is recognized by the cl.7 mAb, a mAb capable of activating human NK cells. **Human 2B4** became tyrosine phosphorylated following pervanadate-treatment of transfected cells and recruited SHP-2. SAP was also recruited to 2B4 in activated cells. Importantly, the 2B4-SAP interaction prevented the assocn. between 2B4 and SHP-2. These results suggest that the phenotype of XLP may result from perturbed signaling not only through SLAM, but also other cell surface mols. that utilize SAP as

a signaling adaptor protein.

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 20 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:307778 CAPLUS

DOCUMENT NUMBER: 131:72440

TITLE: Activating interactions in human NK cell recognition. The role of 2B4-CD48

AUTHOR(S): Nakajima, Hideo; Cella, Marina; Langen, Hanno; Friedlein, Arno; Colonna, Marco

CORPORATE SOURCE: Basel Institute Immunology, Basel, CH-4005, Switz.

SOURCE: Eur. J. Immunol. (1999), 29(5), 1676-1683

CODEN: EJIMAF; ISSN: 0014-2980

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 TI Activating interactions in human NK cell recognition. The role of 2B4-CD48  
 SO Eur. J. Immunol. (1999), 29(5), 1676-1683  
 CODEN: EJIMAF; ISSN: 0014-2980  
 AU Nakajima, Hideo; Cella, Marina; Langen, Hanno; Friedlein, Arno; Colonna, Marco  
 AB Antigen 2B4 is a cell surface glycoprotein of the Ig superfamily structurally related to CD2-like mols. It was originally identified in the mouse as a receptor that mediates non-MHC-restricted cytotoxicity by NK cells and CD8+ T cells. Antigen 2B4 was shown to bind CD48 by mol. binding assays and surface plasmon resonance. Here, the authors investigated the cell surface expression, biochem. characteristics, and function of **human 2B4**. 2B4 was expressed not only on NK cells and CD8+ T cells, but also on monocytes and basophils, indicating a broader role for 2B4 in leukocyte activation. In NK cells, engagement of 2B4 with a specific monoclonal antibody or with CD48 can trigger NK cell-mediated cytotoxicity. The contribution of 2B4-CD48 interaction to target cell lysis by different NK cell clones varied, probably dependent on the relative contribution of other receptor-ligand interactions. In T cells and monocytes, ligation of 2B4 did not lead to T cell or monocyte activation. Thus, it appears that the primary function of 2B4 is to modulate other receptor-ligand interactions to enhance leukocyte activation.

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 21 OF 21 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1998:797293 CAPLUS

DOCUMENT NUMBER: 130:123549

TITLE: 2B4, the natural killer and T cell immunoglobulin superfamily surface protein, is a ligand for CD48

AUTHOR(S): Brown, Marion H.; Boles, Kent; Van Der Merwe, P. Anton; Kumar, Vinay; Mathew, Porunelloor A.; Barclay, A. Neil

CORPORATE SOURCE: Medical Research Council Cellular Immunology Unit, Sir

William Dunn School of Pathology, University of Oxford, Oxford, OX1 3RE, UK

SOURCE: J. Exp. Med. (1998), 188(11), 2083-2090

CODEN: JEMEAV; ISSN: 0022-1007

PUBLISHER: Rockefeller University Press

DOCUMENT TYPE: Journal

LANGUAGE: English

TI 2B4, the natural killer and T cell immunoglobulin superfamily surface protein, is a ligand for CD48

SO J. Exp. Med. (1998), 188(11), 2083-2090

CODEN: JEMEAV; ISSN: 0022-1007

AU Brown, Marion H.; Boles, Kent; Van Der Merwe, P. Anton; Kumar, Vinay; Mathew, Porunelloor A.; Barclay, A. Neil

AB 2B4 is a cell surface glycoprotein related to CD2 and implicated in the regulation of natural killer and T lymphocyte function. A recombinant protein contg. the extracellular region of mouse (m)2B4 attached to avidin-coated fluorescent beads bound to rodent cells, and binding was completely blocked by CD48 monoclonal antibodies (mAbs). Using surface plasmon resonance, it was shown that purified sol. mCD48 bound m2B4 with

a

6-9-fold higher affinity ( $K_d$  .apprxeq. 16 . $\mu$ M at 37.degree.C) than its other ligand, CD2. Human CD48 bound **human 2B4** with a similar affinity ( $K_d$  .apprxeq. 8 . $\mu$ M). The finding of an addnl. ligand for CD48 provides an explanation for distinct functional effects obsd. on perturbing CD2 and CD48 with mAbs or by genetic manipulation.

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

=> log off

ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF

LOGOFF? (Y)/N/HOLD:y

STN INTERNATIONAL LOGOFF AT 12:33:12 ON 15 FEB 2002

<u>Set Name</u> side by side	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u> result set
<i>DB=USPT; PLUR=YES; OP=OR</i>			
<u>L10</u>	Leu-RANTES	1	<u>L10</u>
<u>L9</u>	APO-RANTES	0	<u>L9</u>
<u>L8</u>	Met-RANTES	5	<u>L8</u>
<u>L7</u>	RANTES adj mutation	0	<u>L7</u>
<u>L6</u>	mutated dj RANTES	13489	<u>L6</u>
<u>L5</u>	RANTES adj mutate	0	<u>L5</u>
<u>L4</u>	human adj RANTES	29	<u>L4</u>
<u>L3</u>	L2	471	<u>L3</u>
<i>DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=OR</i>			
<u>L2</u>	RANTES	674	<u>L2</u>
<i>DB=USPT; PLUR=YES; OP=OR</i>			
<u>L1</u>	RNATES	0	<u>L1</u>

END OF SEARCH HISTORY

US-PAT-NO: 6287765

DOCUMENT-IDENTIFIER: US 6287765 B1

TITLE: Methods for detecting and identifying single molecules

DATE-ISSUED: September 11, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cubiacciotti, Roger S.	Montclair	NJ		

US-CL-CURRENT: 435/6; 435/91.2, 536/22.1, 536/23.1, 536/24.3, 536/24.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☒ 4. Document ID: US 6238666 B1

L4: Entry 4 of 29

File: USPT

May 29, 2001

US-PAT-NO: 6238666

DOCUMENT-IDENTIFIER: US 6238666 B1

TITLE: RANTES homolog antibody

DATE-ISSUED: May 29, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hawkins; Phillip R.	Mountain View	CA		
Bandman; Olga	Mountain View	CA		
Murry; Lynn E.	Portola Valley	CA		

US-CL-CURRENT: 424/145.1; 424/130.1, 424/133.1, 424/135.1, 424/139.1, 424/141.1,  
435/4, 435/7.1, 530/387.1, 530/387.3, 530/387.9, 530/388.1, 530/388.23, 530/389.2,  
530/412, 530/413

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 5. Document ID: US 6214540 B1

L4: Entry 5 of 29

File: USPT

Apr 10, 2001

US-PAT-NO: 6214540

DOCUMENT-IDENTIFIER: US 6214540 B1

TITLE: Chemokines that inhibit immunodeficiency virus infection and methods based thereon

DATE-ISSUED: April 10, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
DeVico; Anthony L.	Alexandria	VA		
Gallo; Robert C.	Bethesda	MD		
Garzino-Demo; Alfredo	Washington	DC		

US-CL-CURRENT: 435/5; 424/185.1, 424/192.1, 424/195.11, 424/85.1, 424/85.2, 435/7.2,  
435/7.24, 514/44, 530/351, 530/395, 536/23.4, 536/23.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 6. Document ID: US 6168784 B1

L4: Entry 6 of 29

File: USPT

Jan 2, 2001

US-PAT-NO: 6168784

DOCUMENT-IDENTIFIER: US 6168784 B1

TITLE: N-terminal modifications of RANTES and methods of use

DATE-ISSUED: January 2, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Offord; Robin E.	Bernex			CHX
Thompson; Darren	Santa Cruz	CA		
Wilken; Jill	San Francisco	CA		

US-CL-CURRENT: 424/85.1; 514/12, 514/2, 530/300, 530/324

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 7. Document ID: US 6159711 A

L4: Entry 7 of 29

File: USPT

Dec 12, 2000

US-PAT-NO: 6159711

DOCUMENT-IDENTIFIER: US 6159711 A

TITLE: DNA encoding rantes peptide fragments and methods of treatment with the fragments

DATE-ISSUED: December 12, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Proudfoot; Amanda E. I.	Geneva			CHX
Wells; Timothy N. C.	Geneva			CHX

US-CL-CURRENT: 435/69.5; 435/252.3, 435/254.11, 435/320.1, 435/325, 435/471, 435/71.1,  
435/71.2, 514/12, 514/2, 514/8, 514/826, 514/885, 514/886, 530/351, 536/23.1, 536/23.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 8. Document ID: US 6132987 A

L4: Entry 8 of 29

File: USPT

Oct 17, 2000

US-PAT-NO: 6132987

DOCUMENT-IDENTIFIER: US 6132987 A

TITLE: Recombinant mammalian monocyte chemotactic protein-1 (MCP-1) receptors (MCP-1R, CCR-2)

DATE-ISSUED: October 17, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Charo; Israel F.	Lafayette	CA		
Coughlin; Shaun R.	Tiburon	CA		

US-CL-CURRENT: 435/69.1; 435/252.3, 435/254.11, 435/320.1, 435/325, 435/348, 435/7.1, 435/7.21, 514/2, 530/350, 536/23.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 9. Document ID: US 6110695 A

L4: Entry 9 of 29

File: USPT

Aug 29, 2000

US-PAT-NO: 6110695

DOCUMENT-IDENTIFIER: US 6110695 A

TITLE: Modulating the interaction of the chemokine, B Lymphocyte Hemoattractant, and its Receptor, BLR1

DATE-ISSUED: August 29, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gunn; Michael Dee	San Francisco	CA		
Williams; Lewis T.	Tiburon	CA		
Cyster; Jason G.	San Francisco	CA		

US-CL-CURRENT: 435/7.24; 424/85.1, 435/29, 435/7.1, 435/7.2, 435/7.21

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 10. Document ID: US 6096300 A

L4: Entry 10 of 29

File: USPT

Aug 1, 2000

US-PAT-NO: 6096300

DOCUMENT-IDENTIFIER: US 6096300 A

TITLE: Treatment of myeloproliferative disease with exodus chemokine

DATE-ISSUED: August 1, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hromas; Robert	Indianapolis	IN		

US-CL-CURRENT: 424/85.1; 514/2, 514/8



Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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- ☐ 1. 6344545. 02 Apr 97; 05 Feb 02. Method for preventing HIV-1 infection of CD4+ cells. Allaway; Graham P., et al. 530/388.22; 424/144.1 530/388.75 530/389.6. C07K016/28.
- 
- ☐ 2. 6168784. 28 Aug 98; 02 Jan 01. N-terminal modifications of RANTES and methods of use. Offord; Robin E., et al. 424/85.1; 514/12 514/2 530/300 530/324. A61K038/19 C07K014/52.
- 
- ☐ 3. 6159711. 23 May 97; 12 Dec 00. DNA encoding rantes peptide fragments and methods of treatment with the fragments. Proudfoot; Amanda E. I., et al. 435/69.5; 435/252.3 435/254.11 435/320.1 435/325 435/471 435/71.1 435/71.2 514/12 514/2 514/8 514/826 514/885 514/886 530/351 536/23.1 536/23.5. C12N005/10 C12N015/19 C07K014/52 A61K038/19.
- 
- ☐ 4. 6107019. 13 Jun 97; 22 Aug 00. Method for preventing HIV-1 infection of CD4.sup.+ cells. Allaway; Graham P., et al. 435/5; 435/7.2 435/7.21 435/7.24 435/7.92 435/7.93 436/537 436/542. C12Q001/70.
- 
- ☐ 5. 5965697. 25 Sep 97; 12 Oct 99. Disaggregated mutant human RANTES. Czaplewski; Lloyd George, et al. 530/324; 435/252.3 435/320.1 435/325 435/471 435/69.5 435/71.1 435/71.2 530/412. C07K014/52 C12N015/19 C12N015/63 C12N005/10.
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Terms	Documents
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**WEST**[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 10 of 29 returned.**☒ 1. Document ID: US 6320023 B1

L4: Entry 1 of 29

File: USPT

Nov 20, 2001

US-PAT-NO: 6320023

DOCUMENT-IDENTIFIER: US 6320023 B1

TITLE: Macrophage derived chemokine

DATE-ISSUED: November 20, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Godiska; Ronald	Bothell	WA		
Gray; Patrick W.	Seattle	WA		

US-CL-CURRENT: 530/324; 435/69.5

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">Claims</a>	<a href="#">RMC</a>	<a href="#">Draw Desc</a>	<a href="#">Image</a>
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☒ 2. Document ID: US 6287805 B1

L4: Entry 2 of 29

File: USPT

Sep 11, 2001

US-PAT-NO: 6287805

DOCUMENT-IDENTIFIER: US 6287805 B1

TITLE: Nucleic acid molecules of the protein-coupled heptahelical receptor superfamily and uses therefor

DATE-ISSUED: September 11, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Graham; Gerard J.	Shawlands	Glasgow		GBX
Nibbs; Robert J. Benjamin	Glasgow			GBX
Gonzalo; Jose-Angel	Cambridge	MA		
Gutierrez-Ramos; Jose-Carlos	Swampscott	MA		

US-CL-CURRENT: 435/69.1; 435/252.3, 435/254.11, 435/320.1, 435/325, 536/23.5

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">Claims</a>	<a href="#">RMC</a>	<a href="#">Draw Desc</a>	<a href="#">Image</a>
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☒ 3. Document ID: US 6287765 B1

L4: Entry 3 of 29

File: USPT

Sep 11, 2001